

**REMARKS**

Favorable consideration of this application as amended, and in light of the following arguments, is respectfully requested.

**I. Rejection Under 35 U.S.C. § 112**

In response to the Examiner's rejection, claim 11, as amended, claims a cooperative relationship between the ultraviolet spectrophotometer and the device capable of providing ultraviolet data. As discussed in the previous response, the transmission of information from the spectrophotometer can be over hardware, e.g., an optical fiber cable capable of transmitting light in the appropriate wavelengths, or over the airwaves, if the proximity of the spectrophotometer and the device capable of providing ultraviolet absorption data between 190 and 300 nm is appropriate.

Applicants have used the amended language to assure the inclusion of both forms of transmission. In view of the amendment to claim 11, withdrawal of this ground of rejection is respectfully requested.

Claims 23-24 have been rejected under § 112, second paragraph, as being indefinite as to what structural limitation has been set forth. Applicants respectfully submit that claims 23 and 24 set forth sufficient structural and use limitations on the system as claimed, that they are further limiting and definite. Regarding definiteness, the claims state that the kraft liquor stream is not subjected to dilution. The condition is clear and easily identified. Regarding structure, claims 23 and 24 establish that no structural inlet for a diluent need be present in the claimed system. Since the claims as

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written are clearly understandable, withdrawal of this rejection based upon indefiniteness is respectfully requested.

## **II. Karlberg Cannot Determine Concentrations of Major Components of Kraft Pulp**

Claim 11 stands rejected under 35 U.S.C. § 102(a) as being anticipated by Karlberg. According to the Examiner, Karlberg teaches a process and device for measuring chemical and physical parameters for characterizing and classifying aqueous solutions. This rejection is respectfully traversed.

Karlberg fails to teach or suggest every element of the claimed invention as required by § 102(a). Karlberg expressly limits itself to measuring the chemical and/or physical properties of the following in aqueous solutions: nitrate, iron, ammonium, phosphate, total nitrogen or total phosphorous; turbidity, chemical oxygen demand (COD) and/or biological oxygen demand (BOD). In fact, at no point does Karlberg teach or even suggest that the disclosed process could be used to determine the properties of solutions outside of those expressly claimed. The present application, as amended, claims a system for determining the chemical concentration of a liquid kraft pulp, which contains, *inter alia*, sulfide, hydroxide, and carbonate. Since Karlberg fails to teach the determination of sulfide, hydroxide or carbonate, Karlberg does not anticipate the invention as presently claimed. Further, upon a reading of Karlberg, it would not have been obvious to a person skilled in the art to use the process disclosed in Karlberg to determine the chemical and/or physical properties of key components present in a kraft pulp. Withdrawal of this rejection is respectfully requested.

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### III. The Examiner Failed to Establish a *Prima Facie* Case of Obviousness

The Examiner rejects claims 12, 14-15, 20, 22 and 24 under § 103(a) as unpatentable over Karlberg, and further in view of Doyle. Claims 1, 2, 4-13, and 16-17 stand rejected under 35 U.S.C. § 103(a) as obvious over Danielson in light of Karlberg and Ley. Finally, claims 3, 14-15, and 18-24 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Danielsson in view of Karlberg, Ley, and Doyle. These rejections are respectfully traversed.

Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case supporting these purported cases of obviousness, because the cited references, even when considered in aggregate, fail to teach or even suggest each and every element claimed in the present application. See *In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970). For the reasons discussed above, Karlberg fails to teach or suggest a system for the determination of sulfide, hydroxide or carbonate in a kraft pulp stream.

The Examiner then relies upon Doyle. The Examiner states that Doyle "discusses the analysis of strongly absorbing chromophores by UV/visible ATR spectroscopy . . . and illustrates the potential of the attenuated total reflectance (ATR) sampling technique for UV/visible analysis and explores ways in which this potential can be maximized." Office Action p. 4. However, this reference clearly acknowledges the limitations associated with using ATR within the UV/Vis region and recognizes only a "limited selection of materials available for use as ATR elements." Doyle, p. 48. Particularly, Doyle lists "the lack of suitable high-index materials for use as ATR elements, especially at wavelengths less than ~ 300 nm" as the primary concern for

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applying ATR in the UV/Vis region. Doyle, p. 50. These restrictions demonstrate that one skilled in the art, without more, would not recognize the use of ATR as presently claimed. Doyle clearly states that ATR can be used to measure the absorption of only a limited number of materials, and no reference cited by the examiner has demonstrated the ability to use ATR to measure each of the components of a liquid kraft pulp - carbonate, sulfide, and hydroxide.

The Examiner cites Ley, a reference from 1930, to establish "the ultra-violet absorption spectrum of hydroxyl ion." Office Action, p. 5. However, Ley does not disclose an ability to measure the concentration of hydroxide simultaneously with sulfide and carbonate as claimed in the present application.

Finally, the Examiner cited to Danielsson, but acknowledges that Danielsson was only able to measure the absorption of sulfides and polysulfides and could not separately determine the hydroxide and carbonate components from a kraft liquor stream. Danielsson was not able to separately determine two key components from a kraft process liquor stream, hydroxide and carbonate. In this regard, the Examiner's attention is directed to the Chai Declaration at page 2. The Examiner states that Danielsson "discusses UV/Vis spectroscopic measurements in opaque solutions," but acknowledges that the reference discloses absorptions for sulfides and polysulfides

Since not a single reference alone, or in combination teaches or suggests the simultaneous measurement of hydroxide with sulfide or carbonate, the Examiner has failed to establish a *prima facie* case of obviousness. Withdrawal of all outstanding rejections is earnest solicited.

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**CONCLUSION**

In view of the foregoing amendments and remarks, Applicant respectfully requests the reconsideration and the continued examination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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